Newsletter Vol 2 Issue 2 - January 2020

5 Days Internship Programme
IEEE PELS Day Celebrations
TRIAC

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IA/IE/PELS Jt. Chapter
IEEE Kerala Section









Advancing Technology for Humanity

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Industria NEWSLETTER

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Student Branch Chapter Events

5 Day Internship on Solar PV Power Plant at TKMCE

The 5 days internship on 'Solar PV Power Plant' was conducted by IEEE IA/IE/PELS Jt. Chapter Kerala, in association with IEEE IAS SBC TKMCE, Ever Green Energy Technologies and IGATech Industries, Kochi. The programme creates interconnection between the college and the industry. The first 3 days of internship programme was conducted at TKM College of Engineering, Kollam and the remaining days at Ever Green Energy Technologies, Kochi.

Day 1 (Inauguration)

The program began auspiciously at 9:30am with a silent prayer lasting a minute and was followed by a brief talk on the IEEE Code of Ethics by Ms. Nandini J.Nair, Vice Chair IEEE IAS SBC TKMCE. The welcome speech was given by Dr. Bijuna Kunju K, Vice Chair, IEEE IA/IE/-PELS Jt. Chapter Kerala, followed by presidential address by Prof. Imthias Ahmed T. P and Mr. C.M. Varuahese, director of IGATech Kochi presented the inaugural address. Prof. Sunita Beevi and Prof. Reshna Ayoob received felicitation. Mr.Athul M.V. Chair Industry Institute Interaction of the IEEE IA/IE/ PELS Jt. Chapter Kerala also accepted felicitation. Mr.Hari Prasad, Hub Student Representative of Travancore Hub gave a talk on the PELS membership drive and the morning session ended with a vote of thanks by Ms. Laya Raj, WIE Coordinator of Travancore Hub.



Fig. Inaugural Session of 5 Day Internship Programme

Theory session

After a tea break, the sesion began in full swing starting with theory session on basics of solar system by Mr. C M Varughese.

Practical session

The delegates were sorted into 5 different groups, each group were led by a captain.

After lunch break, a practical session on designing a power plant for your home was conducted in the DC Machines Lab of TKMCE. The delegates were guided by Mr. C M Varughese. After a short break, a theoretical class on the classification of PV Power plant was conducted and block-wise description was given.

DAY 2

The morning session was on the design of commercial Solar PV power plant by Mr. K. Ramachandran. The session was very interactive and the delegates were actively involved in question-answer sessions.

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Mr. Sudev.D conducted a class on types and selection of PVs and inverter with the **PowerPoint** of presentation. Afternoon session was conducted by Mr. C M Varughese on the familiarization and identification of parts of a solar plant and the evening session was on solar battery types and sizing. The last two sessions were held in the Electrical Machines Labs so as to provide practical insight into the workings of Solar PV Power Plant. The delegates were made to understand the parts and working of a solar plant using the experimental setup arranged in the lab.



Fig. Session on Familiarization of Solar Plant

DAY3

The morning session on the civil construction, structure and tracking of Solar PV power plant was taken by Mr. Sudev D. A brief introduction to energy auditing was also given to the delegates. The first step in identifying opportunities is to reduce energy expense. It was followed by forenoon session on safety at sight and personal protection. Afternoon session was conducted by Mr. C. M. Varughese on the simulation of Solar PV Software PV Syst which enables quick

estimation of production at project planning stage, detailed study, sizing, hourly estimation and report generation. The evening session was on solar inverters—types and selection by Mr. Sudev.





DAY 4

The day 4 started off with phase one of Industrial visit to Cochin international airport Limited (CIAL), which is proudly known for being the first completely solar powered airport in the world. The delegates were given a treat of the panaromic view of the 14.4 MW ground mounted, grid connected photovoltaic power station of CIAL and details of the working was also given. The daily data analysis of the total output energy, weather forecasting data, plant performance data and many more were monitored

using SCADA. After the industrial visit to CIAL, an industrial visit was organized to IGATECH industries, one of the famous power electronics industries of Kerala. The delegates were given practical exposure to the making of power electronics devices and marked a great response. The day proved to be the most exciting for the delegates.

DAY 5

The day 5 started with the mesmerizing session by G. Krishnakumar on the affairs Energy Auditing, Site study and optimization technique. The session was well handled with a descriptive PowerPoint presentation which covered the stages and levels of energy auditing, site and optimization. A session was led by Ajith, one of the technical faculities of Kochi Metro. He explained about the importance of Solar Power in the running of metros in the world. He elaborated his session with a practical session on the installation of Solar Power Plant. The session ended with the positive and satisfactory feedbacks from the delegates.

5 Day Internship Program, Kochi

The internship programme was of 5 days, conducted on a topic "Solar PV Power Plant" from 24 th July to 28 th July, 2019 at Ever Green Energy Technologies, Kochi. Theoretical sessions, Practical sessions, Simulation sessions, Designing sessions, Energy Auditing and other sessions were conducted along with Industrial Visits to Cochin International Airport Limited,

Kochi and IGA Tech Industries, Kochi. It was organised by IEEE IA/IE/PELS Jt. Chapter Kerala in association with IGA Tech Industries and Ever Green Energy Technologies, Kochi. The inauguration began auspiciously at 4.30 pm with a silent prayer lasting for a minute. Itwas followed by reading out IEEE Code of Ethics by Mr. Sarath Chandran (Electronics Communication Coordinator, IEEE IA/IE/PELS Jt. Chapter Kerala). The welcome speech was delivered by Er. C M Varghese(Chair- Industry Relations Director, IEEE IA/IE/PELS Jt. Chapter Kerala). He had mentioned about the future of solar energy and the course details. The inauguration was done by Dr. Suresh Nair(Immediate Past Chair, IEEE Kerala Section), followed by lighting up the lamp. He explained about the importance of IEEE in the society and internship programmes.



FIRST DAY

The registration started at 9.30am and lasted for 1 hour. The event was started with a session by Er. C M Varghese (CEO, EGET) on the basics of solar system and PV Power Plant as the morning session with a tea break in between. After 1.15pm, lunch was given to delegates. The

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afternoon session was led by C M Varughese wherein the delegates were familiarised with different instruments used in a Solar PV Power Plant. The delegates were taught to measure the specified quantities and the calculations based on it.

SECOND DAY

The day started with a session led by Dr. Nikhil P G(Former Scientist, National Institute of Solar Energy). He explained various aspects used in Solar PV Power Plant and did some group activities. The delegates were divided into 5 groups having 5 people as strength. They were given tasks to study a given case study happened once in the world and were asked to make a chat presentation on it. Groups were restructured in such a way that each person in each group understood the problem and solution in each case. They were taught to calculate the profit they would gain after installing plant at the house. Commercial designing were also done. After designing, a theoretical session on Types and Selection of PVs and Inverter was led by Sudev D. After leaving for lunch, practical session on types and Selection of PVs and Inverter was done. The day ended with simulation session, conducted using PVsyst software.

THIRD DAY

The day 3 started with the familiarisation of parts of Solar PV Power Plant by Sudev D. The delegates were divided into several groups for the familiarisation sessions. A session on safety and precaution measures to be undertaken at site while work

ing in a Solar PV Power Plant personally as well as on dealing with the equipments were taken by Annie James. The afternoon session was handled by C M Varughese wherein the delegates were asked to identify the familiarised parts of a Solar PV Power Plant and arrange it in a required manner.

FOURTH DAY

The day 4 started with the first phase of the Industrial Visit to Cochin International Airport Limited, the first fully solar powered airport in the world, wherein all the delegates were overwhelmed with a panoramic view of a 14.4 MW ground mounted, grid connected photovoltaic power station. An overview of the details of the project were given. The daily data estimations with the help of SCADA monitoring were clearly explained along with the total output energy, weather forecasting data, plant performance data and many more.



The day 5 started with the session on Energy Auditing, Site study and optimisation technique by G. Krishnakumar. The different aspects involved in the various levels of energy auditing were well ex

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plained with PowerPoint presentations. The stages included in energy auditing of a site and its optimization techniques were also described in a well clearly manner. The day 5 got soon ended up with lunch since a majority of the delegates have to travel a long distance to reach their places.



Visit by Dr. -Ing Peter Magyar

Dr. -Ing Peter Magyar (Chapter Development) visited Kerala for being a delegate for All Kerala Power & Energy Society Student Colloquium'19 (AKPESSC'19), organized by IEEE PES Kerala Chapter and hosted at College of Engineering Karunagapally on 23-25th August 2019. On the final day of the event, he led a session on 'Importance of IAS membership', briefing the resources in IAS, its interaction with IAS and the membership benefits of being an IAS member. The sessions encouraged the delegates for being an IAS member and thereby enjoy the resources of IAS. He motivated the aspirants through his IEEE journey. He made an impulse to the students and professionals to the vast opportunity that industrial applications society provides.



Fig. Dr. Ing Peter Magyar at College of Engineering Karunagappally

IEEE PELS Day Celebrations

IA/IE/PELS Jt.chapter Kerala organized an industrial visit to KELTRON, Karakulam, Trivandrum, Kerala, a leading power electronics industry on 20th June 2019 as part of PELS day celebrations. The student members from various engineering colleges in Kerala participated in the event. A cake cutting celebration was also arranged along with the industrial visit. The team visited various sections of the KELTRON. The engineers in the plant explained to the student members about the manufacturing techniques of the various power electronic products. The students learned in detail about the manufacturing of various equipments under the power electronics group of KELTRON. 28 PELS members participated in the visit.



Two day Proficiency Program on " ELECTRIC AND HYBRID VEHICLE ENGINEERING"

IEEE IAS SBC Saintgits college of Engineering in association with IEEE IA/IE/-PELS Jt. Chapter Kerala and Department of Electrical and Electronics Engineering conducted 2 day Proficiency Programme on " ELECTRIC AND HYBRID VEHICLE ENGINEERING" on 30 and 31 of August 2019. The programme was sponsored by IEEE Industry Applications Society. Mr. P Prasanthkumar from Haritha TechLogix Pvt.Ltd , Bengaluru handled the training sessions. The main objective of the workshop was to give a brief overview about the electric and hybrid vehicles design and currently used technologies in the field. Modeling and simulation studies of Electric & Hybrid vehicle were performed in MATLAB/ SIMULINK environment. Case studies on the state-of-the-art technologies used and the improvements made in the design of both electric and hybrid vehicles were studied by taking examples from Chevrolet, Tesla, Toyota etc. The training programme was attended by 60 participants which includes participation from 7 external colleges in Kerala.



One day Workshop on "Health conscious Fast Charging Strategies And Battery Management Systems For Electrified Autonomous Transportation"

IEEE IA/IE/PELS Jt. Chapter Kerala and IEEE IAS SBC TKMCE jointly organized a talk on the topic "Health-conscious Fast Charging Strategies and Battery Management Systems for Electrified Autonomous Transportation" at TKM College of Engineering, Kollam on 5th of August 2019. It had been presented by Prof. Sheldon S. Williamson associated with the Ontario Tech University, Canada who holds the prestigious NSERC Canada Research Chair position in electric energy storage systems for transportation electrification. About 59 undergraduate students from various colleges took part in the workshop. The technical talk was split into 4 sessions as pre-planned by Prof. Sheldon.

Session 1: Smart Power Electronics Based Active Battery Energy Management Systems for Electric Transportation.

In this session, the role of on-board cell voltage balancing (with temperature rise considerations) of Li-ion batteries was been highlighted. The design and implementation of a novel, reduced-parts DC/DC converter for battery cell-voltage-equalization were discussed.

Session 2: Novel Power Converters for DC Fast Charging

The possibility of employing a 3-phase, 3-switch (TPTS) converter as a single-stage charger for DC fast charging

was introduced. A new modulation technique for controlling a TPTS converter was introduced further. Experimental verification and test results of the designed converter/charger prototype were presented.

Session 3: Integrated PV/Smart-grid Based Charging Applications.

This session introduced both home and public charging interface designs from a power electronic intensive solution perspective. Several grid-connected as well as PV/grid interface topologies for EV charging were presented. The modelling, sizing, design, and implementation of a novel high-efficiency, single-stage PV/grid/EV charging infrastructure was also presented.

Session 4: High-Efficiency, Wireless Fast Charging Concepts and Methodologies

The concluding part of the talk focussed on introducing advanced power electronics solutions for rapid charging using wireless power transfer. Both inductive power transfer (IPT) and capacitive power transfer (CPT) were introduced. Critical issues such as IPT coil design, CPT dielectric medium/transfer plate designs, and converter topologies were discussed.



WORKSHOP : DESIGN OF POWER ELECTRONICS PRODUCTS

IEEE EA Kerala Section, IEEE LMAG Kerala Section, IEEE IA/IE/PELS Jt. chapter Kerala and IEEE IAS SB chapter CET jointly organized and conducted a one day Workshop on Design of Power Electronics Products for engineering students on 21st September 2019, Saturday, at College of Engineering Trivandrum. The session was handled by Dr.Madhu Mangal, vice chair, LMAG Kerala Section. He has over 40 years of experience in R&D and Engineering in the field of Power Electronics, as Head of R&D of Industry and as Head of Government R&D Institutions. Presently he is Chief Consultant in Power Electronics for Advanced Rail Controls Bangalore. He is a Life Senior Member, IEEE and Fellow, Institution of Engineers (India). The workshop started with an introduction to power electronics and power electronics products. A lecture was given about what is power electronics, power electronics products and various power converters. The second part of the session was about UPS systems. It started off with an introduction to UPS systems, followed by Why UPS systems and its evolution. The third quarter of the workshop focused on design of UPS system. Here, UPS system specification and topics related to design were covered. The topics covered included static switch devices, output filters, inverter power devices etc.



Fig: Delegates after the workshop

The workshop session came to an end by students solving a given task. An exercise on design of power electronics products was given to the participants, which was to be done by the delegates. The ideas and solutions were discussed in the end. A great response was obtained from the participants. Many explained how helpful the session was. The participants who were final year students found the workshop very useful to do their main project. The participants said they got a new insight about power electronics. In short, students gained a better knowledge about power electronics and its prod-



Fig: Madhu Mangal during his workshop

TRIAC - Technical Revamping Initiative Aspired Concourse

TRIAC is a technical event organized by IEEE IA/IE/PELS Jt.Chapter Kerala, IEEE PES Kerala Chapter and IEEE ComSoc Kerala Chapter at FISAT. The event was conducted on 26th and 27th October 2019. There were 200+ participants in total. The workshops cum hackathons were VitantuSanjara, Saurorja, Prathijwal and Yanthra. The chief guest of the event was Dr.Usha Titus IAS, Principal Secretary, Higher Education Department. Workshops were conducted on the first day of the event and hackathons were conducted on the second day which also helped to sharpen their skills.

Apart from workshops there was also a panel discussion by IEEE Young Professionals of IEEE PES. The panel included Er.Anandhu S Kumar (SB Chapter Coordinator, IEEE IA/IE/PELS Jt.Chapter Kerala & Student Activity Coordinator, IEEE PES Kerala Chapter), Er. Anish Mohan (IEEE PES YP Coordinator), Er.Shyam Pradeep (IEEE PES YP) and Er. Akash P Nambiar (Advisory Committee, IEEE SB FISAT). There were stalls arranged by IAS Student Branch Chapters of College of Engineering Karunagappally, College of Engineering Chengannur, Rajiv Gandhi Institute of Technology, Kottayam and Jawaharlal Nehru College of Engineering Palakkad. The event was a great success and the participants many gave positive feed-backs. They were able to learn and showcase their technical skills and the event ended up with flying colors.

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Yanthra was conducted as part of TRIAC handled by Er. Anish Mohan and Ms.Sajna Mohammed. The workshop covered portions of basic robotics using Arduino. The session included familiarization of components, assembling of parts and programming. About 51 participants attended the workshop.

Day 1: The workshop session began at 9 am and the first segment was a brief introduction to robotics and basic components. Arduino was the main discussion point. Functions, parts, circuits and programming using Arduino were also discussed. The second and the third segment had discussions on circuits and functions using these components and the final segment was the combination, logic circuits and its functions.

Day 2: The hackathon, which began at 9 am, was the most interesting part for all delegates. They used their ideas, skills and knowledge from the session with the help of the instructor and created their own robots. Overall the workshop was useful and enjoyable for all delegates.. Teams showcased outstanding performance was awarded with a cash prize.



Fig: TRIAC Inaugration

PRATHIJWAL, a workshop based on Illumination technology was handled by Mr.Hari Prasad and Mr.Akshay Krishnan. The venue for the workshop was at Central Computing Facility Lab. A count of 75 delegates attended the workshop

Day 1: The workshop started at 9am with the introduction to properties of light. They introduced about the primary properties like intensity, wavelength, frequency, polarization, etc. Later on they introduced about unit of luminescence (lux), its values for different applications, calculation of lux value so and so. The refreshments were provided in between the workshop. Next they introduced the software called DIALux, which is the world's teading software for planning, calculation and visualization of indoor and outdoor lighting. The points they presented were very informative.

Day 2: The hackathon session started at 8:45am. In hackathon, the delegates were able to calculate the lux value of a reading room using the DIALux software. Both the workshop and hackathon were very informative.



Fig: PRATHIJWAL

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Fig: SAURORJA

SAURORJA, workshop based on solar panel system was run by Mr.Abhinav Rajeev and Ms.Athira M. The Workshop was conducted at the Electrical Lab. 50 delegates attended this workshop.

Day 1: The workshop was started with some introduction on basic electrical appliances and the delegates were able to understand and elaborate their ideas. Later on they were introduced to the basic components required to set up a solar panel, its working, the various criteria for selecting these components, its market price and so on. It gave out a clear cut idea about how to design a Solar Photovoltaic System based on the consumer requirements. Delegates were able to do some experiments on solar panel. The first day workshop session ended up with an experiment to check the efficiency of a solar panel under shady conditions.

DAY 2: The session started up with new topic - PVsyst V6.84 (software). There was a 5 hour hackathon based on the workshop conducted on day 1. The delegates found the session informative. Overall the workshop was understanding and applicable in practical life and enjoyable for all delegates..

VITANTUSANJARA, a two day workshop-cum-hackathon on Wireless Communication organized as a part of Technical Revamping Initiative Aspired Concourse -TRIAC at Federal Institute of Science & Technology on 26th & 27th October 2019.

The session was handled by Dr.Gandhiraj R, Professor, Amrita College of Engineering, Coimbatore. 26 students from various colleges across the state participated actively.

Day 1: The workshop started with giving introduction to few theories like time domain, frequency domain & Fourier transfer. This was followed by familiarization of GNU radio software. How to form a signal wave form was edified. This was followed by instructing how to filter a signal & catch different audio frequencies. The session concluded by discussing how filter a given input audio signal.

Day 2: The second day consisted of a hackathon to test the workshop knowledge gained by the delegates. The task given to them were to take a song of their choice & separate the audio file & karaoke.



Fig : Vitantusanjara

Panel Discussion:

A panel discussion was held by IEEE PES Young Professionals during TRIAC'19. The panel was included by Er.Anandhu S Kumar (SB Chapter Coordinator, IEEE IA/IE/PELS Jt.Chapter Kerala & Student Activity Coordinator, IEEE PES Kerala Chapter), Er. Anish Mohan (IEEE PES YP Coordinator), Er.Shyam Pradeep (IEEE PES YP) and Er. Akash P Nambiar (Advisory Committee, IEEE SB FISAT). They discussed about their YP experience and Student-YP Transitions.



Fig: Delegates & Volunteers of TRIAC

AKIASSC '20 Steering Committee meeting

Steering committee meeting of AKI-ASSC'20 was held at UKF College of Engineering and Technology at 18 December 2019. The agenda of the meeting was the verification of proposed schedule for the event. There was also a venue visit by the Joint Chapter Execom members where the event is proposed to be conducted. The representatives of the chapter were satisfied with the proposed venues.



Solar Water Heater Installation at Navajeevan Abhaya Kendram

IEEE IA/IE/PELS Jt. Chapter Kerala has installed a Solar Water Heater at Navajeevan Abhaya Kendram, Nedumpana, Kundra, Kollam. Navajeevan Abhaya Kendram is one of the homes in Kerala, built for the no-relative ones. The Kendram was having a difficulty of ease flow of hot water for its inmates. This difficulty was mainly caused by instant electricity and fuel shortage. The humanitarian project helped the inmates of the 'Kendram' to ease the difficulty of having hot water. The quantity of Solar Water Heater is upto 250 litres. The installation was completed on 24 December 2019. The heater shows the quantity of hot water, amount of water can be filled more, indication of heating and solar energy storage.



STUDENT BRANCH CHAPTER EVENTS

Expert talk on Design Steps for Power Electronic Converters

IEEE IAS Student Branch Chapter IIST had organized an expert talk on 'Design Steps for Power Electronic Convertors' on the 31st of July 2019. The expert talk was given by Prof (Dr). H. M. Suryawanshi, Professor from the Department of Electrical Engineering, Visvesvaraya National Institute of Technology, Nagpur (India) and Chair Professor of Indian National Academy of Engineering (INAE). The secretary of IA/IE/PELS IEEE Kerala Section Prof. Biju K was present on this auspicious occasion. The technical talk covered the topics such as specification of converters, selection of power semiconductor switches, selection of magnetic material, design of snubber circuit and heat sink, design of gate driver circuit, different topologies of converters and closed loop control. In addition to this Prof (Dr). H. M. Suryawanshi had described the research that is done on converters in VNIT Nagpur.

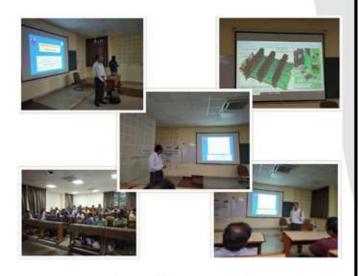


Fig. Design Steps for Power Electronic Converters

EI ISQIP OVERVIEW

EI IEEE Student Quality Improvement Programme (EI-ISQIP) is a day-long training program, organized, coordinated and conducted by IEEE Industry Applications Society Student Branch Chapter College of Engineering Chengannur in association with IEEE Instrumentation & Measurement Society Student Branch Chapter College of Engineering Chengannur from 6th to 8th July 2019. EI ISQIP hosted its second edition in this year's massive take on the flagship programme. The event took off with a workshop on NodeMCU using IoT. Beginning with the basics and then moving forward through the advancements of the era, the following session covered an introduction session to Industrial Automation as well as its scopes and applications. The second day and final day handled two phases of a hands on workshop on Industrial Automation using PLC and SCADA, covering the basics, uses, interfacing with output elements and much more.



Fig. EI ISQIP at College of Engineering Chengannur

Introduction to Arduino & Build a Line Follower

IEEE IAS SBC SCT in association with IEEE RAS SBC SCT conducted a workshop on "Introduction to Arduino & Build a Line Follower" on 18th August 2019 from 9.30 am to 4.30 pm. It was primarily a promotional event of above societies and was presented by Anirudh L. It included introduction on Arduino, Arduino IDE and Line Follower implementation. Students got familiar with the IDE platform and programming. Followed by that the concept and working of Line Follower was explained.



Invited Lecture on Basic Concepts in Power Electronic Converters

IEEE Power Electronics Society (PELS) Student Branch Chapter Government Engineering College Thrissur (GECT) organized an 'invited talk' on 30 August 2019. Dr. Dinesh Gopinath, Associate professor, College of Engineering Trivandrum, delivered the lecture on 'Basic Concepts in Power Electronics Converters'. The program was followed by an interactive session, during which partici

-pants asked questions regarding the topic covered. The technical talk covered different topics including specification of converters, selection of power semiconductor switches, selection of magnetic material and heat sink, design of gate driver circuit etc.



IAS, PELS Membership Drive

IEEE IAS Student Branch Chapter of NSS college of Engineering has organized a combined Membership drive session in association with IEEE IAS and IEEE PELS. The freshers from various part of Kerala participated in the orientation class. The class started with some brief ideas about IEEE and other Societies, and explained how these professional bodies work which was followed by a session about Industry Applications Society, Power Electronics Society and its benefits. The session was conducted with the aim to increase the membership strength in both societies. The drive session ended up with an interactive session with students.



Quiz Contest - "Industry 4.0"

IEEE IAS SCT Student Branch Chapter conducted an online guiz contest on "Industry 4.0" on 20th August 2019 at 7.30 pm. Forty-two (42) students from various years and branches participated in the contest. There was a total of 15 multiple choice questions, each having only one correct answer. The questions were based on modern advancement in technology that are major contributors to the data driven Fourth Industrial Revolution, hence the name "Industry 4.0". Adithya Benoy and Siddharth Gopinath of first year Computer Science and Engineering Department bagged the first and second places respectively. Participants found the quiz exciting and were informed on the latest advancement in industrial technology.



Mastermind 2019

Mastermind 2019 organized by IEEE IAS SBC, College of Engineering Chengannur consisted of two phases. The first phase was an online guiz competition which was conducted on the 11th-12th May 2019. 57 students attended the Quiz Competition among which top 10 students won the chance to take their brains to battle in the next phase of the game. The second phase of Mastermind was conducted on 20th August 2019, which was an "Idea pitching" Competition. Students came up with their brilliant ideas, which were graded on the basis of their creativity and technical and economic feasibility. Among the selected ten, Jobal James was identified as the 'Masterbrain' with his brilliant idea of using Machine Learning and Artificial Intelligence in pre-



IEEE PELS DAY at NSSCE

IEEE Power Electronics Society Student Branch Chapter of NSS College Engineering celebrated IEEE PELS day at Seminar Hall of Electrical and Electronics Engineering Department. The auspicious occasion was inaugurated by Sri S Jayakrishnan, Senior Divisional Electrical En gineer Operations, Southern Railway. He has various experiences in the field of engineering and has been working for past thirty years in Indian Railway. He gave a vast idea regarding the relevance of Power Electronics and his experiences and various other scopes in Indian Railway.



Fig. PELS Day Celebrations at NSSCE Palakkad

IAS Membership Development Session

IEEE Industry Applications Society Student Branch Chapter College of Engineering Chengannur organised a membership development session on 7th July 2019. The session was handled by Mr. Nebic J Johnson, Chairman IEEE IAS SBC CEC. Students belonging to different colleges in Kerala including GEC Palakkad, CE Trivandrum etc. were present in the session. The students were given a brief introduction about IEEE Industry Applications Society and the innumerable benefits offered by IEEE for its members. The need for a student branch chapter and the corresponding activities were reviewed. He then shared his experience

about various opportunities IEEE had offered him. The students were also made aware about IEEE resources like IEEE Spectrum, IEEE Xplore Digital Library, IEEE magazines etc. The session resulted in many non - IEEE members showing high interest in joining IEEE as well IEEE Industry Applications Society.



Fig. IAS Membership Development Session

Soft Skill and IEEE Volunteers Training

IEEE SB Chapter of Musaliar College of Engineering conducted a session for Soft skill training, vTools trainin and Benefits of IEEE volunteering by Mr Abey Easow Joseph on 3rd August 2019 at Musaliar College of Engineering. Mr Abey covered the importance of soft skill in our career and how to improve soft skill during our academics and also gave training on vTools and about the benefits of IEEE volunteering. Initially the class was focused in soft skill training. He taught the participants how to face the outside environment. After this event soft skill increasing activities were done, which taught how to work together to achieve a goal. Followed by that, Volunteers training took place in

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which participants were taught on how to use vTools efficiently for creating e-notice, Officer Reporting, Events Reporting, Student Branch Reporting, creating IEEE mail accounts etc. By the end of the session, the students aquired the knowledge to be a better volunteer.



Fig. IEEE Volunteer Training

PELS Quiz 2k19, GEC Thrissur

IEEE Power Electronics Society (PELS) Student Branch Chapter, Government Engineering College Thrissur organized a quiz on basics, history, and application of power electronics. The quiz was organized in two phases; top five groups in first phase were selected to the second phase held on 23rd July 2019. A total of twelve student groups participated in first phase of quiz. The chapter chairman, John A R introduced all the participating teams and quiz master to the audience. The guiz program was witnessed by students and professors. The IEEE PELS student branch chapter advisor, Dr. Jaison Mathew congratulated all the winners. The winners were presented prizes and gifts were given to participants from the audience.



Flg. PELS Quiz 2019 at GEC Thrissur

PELS Day Celebrations

IEEE Power Electronics Society (PELS) Society Student Branch Chapter, Government Engineering College Thrissur celebrated the very first PELS day on 20 June 2019. The celebrations were inaugurated by Head of electrical and electronics engineering department of the college, Dr. Reji P. Speaking on the occasion chapter advisor, Dr. Jaison Mathew congratulated the PELS members on their achievements and mentioned about the future plans of the SBC. IEEE Student Branch counselor Prof. Joseph K D talked on the recent trends in the power electronics. The chapter held a cake cutting ceremony and a socializing event in connection with the celebration



Workshop on 'LinkedIn'

IEEE IAS SBC SJCET conducted a workshop on LinkedIn on 2nd May 2019. The session was handled by Criss Shaji (IEEE IAS SBC SJCET Chair). He explained about various important aspects of LinkedIn, DOs & DON'Ts while using it and the account creation. Session ended up with the account creation of all the delegates.



Fig. Workshop on LinkedIn

Industrial Visit to 'FACT'

Industrial Visit to FACT was organized on 10th July 2019 by IEEE Industry Applications Society Student Branch Chapter College of Engineering Chengannur in association with IEEE RAS SBC CEC, IEEE IMS SBC CEC & IEEE PES SBC CEC. This visit was meant to get the delegates exposed to the industry and its operations, and also to instill a sense of professionalism in them. The 39 delegates along with their two mentors visited the industry having hazardous chemicals that dealt with the production of sulphuric acid, phosphoric acid and ammonia. This practical exposure to the industrial envir-

-nment was highly beneficial for the aspiring engineering students and it was worth their while.



Fig. Industrial Visit to FACT

Revampment of IEEE SB CE Kalloopara

As a part of revampment of IEEE SB CE Kalloopara, Nebic J. Johnson(Student Representative, IEEE IA/IE/PELS Jt. Chapter Kerala & Chairman, IEEE IAS SBC CEC) led a membership development session on 29th August 2019 at College of Engineering Kalloopara. IEEE SB College of Engineering Kalloopara was one of the probation listed SBs of 2019. During the session, he explained about the benefits and opportunities of IEEE, benefits of different society memberships, activities in IEEE Kerala Section and different Student Branches.



PLC And SCADA Workshop

IEEE IAS TKMCE and CGPU TKMCE organized a 2 day workshop on PLC (Programmable Logic Controller) SCADA (supervisory control and data acquisition) on October 19th and 20th. On the first day, The students were enlightened about the emerging automation industry and the necessities for having knowledge in PLC and Scada Systems. The workshop helped the students to understand the basics of PLC programming and also gave them practice on ways to automate the industry. They were able to work on problems like Two way Traffic Systems, Automatic Car Parking system .The students were provided the latest software CelioSoft2.0 to work with. The workshop focused on PLC hardware, software, digital and analog control using PLC, Introduction to programming of PLC and programming digital logic gates. All the students were inculcated with the basic fundamentals of the same. By the end of the first day ,the students were able to tackle several problems put forward to them on their own.

On the second day, the students dealt with some more basic instructions like Timer & Dealth Counter circuits and also more functions of PLC with practical applications. By afternoon, the workshop forwarded on to Scada Programming and were provided with INTOUCH software developed by the most famous brand Wonderware. The students were able to try out several methods to implement and display the working of an automated industry using SCADA. They

were also able to learn the working of an automated bottle making industry by the end of the day. There were a total of 25 participants attending the workshop. They were provided with the software on site. The sessions were from 9 am to 4pm with a lunch break in between. The participants were extremely keen and enthusiastic as it was a hands on session.



Fig: Delegates at PLC and SCADA workshop

ORIENTATION

Fresher's Orientation Session was organized by IEEE Execom members of Rajiv Gandhi Institute of Technology, Kottayam on August 2019 at College Auditorium. IEEE RIT SB chair Abhijith addressed the newly joined 1st years of CS, EC, EEE and ME departments. He gave a brief description about the IEEE organization and its motives. IAS chair Nithin V M gave a brief introduction about the Industrial Application Society and gave an idea about the benefits of joining the IAS chapter. He discussed the volunteering and technical benefits which a student can earn from joining this organization. Group activities were also conducted among the students as an ice breaking session. Activities and games were arranged along with the orientation session to nourish their coordination and leadership skills.



Fig: Nithin V M explaining about IEEE IAS

Technical Lecture On 'Recharging Electric Vehicles Using Smart Meter'

IEEE Industry Applications Society Student Branch Chapter College of Engineering Chengannur organised a technical lecture on "Recharging Electric Vehicles using Smart Power meter" on 19th September 2019. The session was handled by Ms Anne Benoy, who gave an elucidation on Electric vehicles and smart power meters. She illustrated the escalation of electric vehicles and foreseen marketing advancement in the near future. She emphasized on the multiple challenges posed by battery recharging and hence the installation of smart power meters in commercial parking deciphers the conundrum. The session was organised in an interactive and engaging manner. It helped the students to improve their idea on the topic and gave a better understanding on how smart power meters are required in the near future. Also, the session assisted in increasing the interest of the students on the topic as well.



Fig. Anne Benoy taking the technical lecture

SDLP

The Section Distinguished Lecture Program was conducted by IEEE IAS Student Branch Chapter NSS College of Engineering, Palakkad in collaboration with IEEE Kerala Section on 31st October 2019. The half-day session was handled by renowned speaker Dr. Deepak Mishra, Department of Avionics, IIST Thiruvananthapuram. The distinguished lecture program was on Machine Learning, which is very prominent as far as technical education is concerned. About 65 students attended the session. Among them, there were IEEE IAS student members of NSS College of Engineering and Ammini College of Engineering. The lecture was worth attending in which topics like Neural Networks and Deep Learning were covered. After attending the session we could analyse the scope of deep learning and neural networks in machine learning. The lecture started with deep learning, how the machine processes two similar images and distinguishes the two, such as a Barn owl and an apple. We could also

We could also understand that Mathematics, especially probability and statistics are indispensable in learning the concepts of deep learning. As we all know, probability is the science of quantifying uncertain things. Most machine learning and deep learning systems utilize a lot of data to learn about patterns in the data. Whenever data is utilized in a system rather than sole logic, uncertainty grows up and whenever uncertainty grows up, probability becomes relevant. Due to this fact, concepts like Bayes decision theory and Nearest Neighbour Classifier were discussed. Bayes decision theory mainly focuses on Posterior probability which says which class is more likely to happen. Bayes classifier minimises error. But in the case of Nearest Neighbour classifier, there is no statistical view point, hence the error in Nearest Neighbour is twice that of Bayes classifier. Another concept discussed was discriminant function. Professor also explained that neural networks are an example of Non linear discriminant function. A simple iterative algorithm called Perceptron Learning algorithm which comes under linear classifier was discussed as well.



Fig: IAS SBC NSSCE volunteers after SDLP session

Workshop on Transistors

Industry Applications Society of IEEE SB RIT conducted a three day workshop on 'Transistors' on 30th October to 1st November from 4pm - 6pm. Workshop was taken by Vishnu P R student of our Electrical Department. The workshop was conducted at Electrical Department Classroom. The workshop was fully hands-on and each student implemented the basic circuits using transistors and mosfets and understood the basic concepts of electronics which are beneficial for their growth in technical knowledge.



Fig: Delegates at workshop on Transistors

Summer Internship Progam - PGCIL

Summer internship program days was organised to students as two batches in one of the core companies of electrical and electronics departments, Power Grid Corporation of India Limited (PG-CIL), Pallikkara. One batch of 8 students attended the internship from May 27 to May 1,2019. And another batch of 7 students attended from May 3 to May 8, 2019. The students got to learn the working of the substation, the equipments present, HVDC method of power transmission, optical fibre communication, working of grid systems etc. They also got the opportunity of working closely the officials and authorities

there. Both the batches were taken for field visits also where they got to learn about power transmission equipments and safety measures taken in a substation. The interns submitted detailed reports to the HR manager and all of them got the internship certificates. The feedbacks received were encouraging for coordinators. Highly thankful to PGCIL, Pallikkara for giving us this opportunity of doing an internship in a core electrical and electronics company.



Fig: Delegates visiting plants at PGCIL

Python Workshop

IEEE SB CEK in association with IEEE CS SBC and IEEE IAS SBC of College of Engineering Karunagappally always takes keen interest in enriching students with programming skills. As a part of it a workshop on introduction to python for the first year students on 19th, 20th and 21st September 2019 at programming lab. The resource persons were Akshay Krishnan and Arun Sreenivas. The workshop was conducted by technically skilled students from the Student Branch. It was a 3 day workshop which includes general introduction to programming and its basics different data types, basic arithmetic operations and differentiating between Linux and Windows.

It was a trailer for their programming exploration. Around 40 students attended the Workshop.It mainly focused on moulding base of programming in the students , without a strong base a good programming career can't be built. The workshop was for all branches of students as programming plays an important role in the field of engineering. students were trained in such a manner that they can now do basics programs by their own. Even though it was a 3 day workshop its impact was unmeasurable as many of the students were using programming language for the first time. Students were well aware of the two operating systems (windows and Linux). The fervour driving the students towards more of such learning encouraged the IAS to conduct further enriching workshops.



Fig: Delegates at Python workshop

Circuit Debugging Competition

IEEE Industry Applications Society Student Branch Chapter College of Engineering Chengannur conducted a Circuit Debugging Competition on 10 th October 2019, Thursday. The event aimed to enhance the students' knowledge on basic circuits and also helped to

showcase their brainstorming ideas in circuit solving. The competition had ten rounds in which the participants were given ten circuits (one circuit for each round). The participants were allotted with a time of 10 minutes for cracking all the rounds. The participants who completed the debugging first and accurately within the specified time were selected as winners. The winners of the competition were Ms. Laya Mariam Joseph, Mr. Ruben Mathew and Mr. Asher Thomas Babu who completed the debugging according to the given rubrics. They were awarded with a cash prize of 1000 Rs.



Fig: Delegates solving circuits

IAS Members MEET UP

An IEEE IAS members meet up was conducted on November 04th, 2019, 12:10 to 1:00 pm. There were many IAS members and Execom members attending the meeting. The IEEE IAS SBC Chair, Nithin V.M of RIT talked about the upcoming activities of the IAS chapter and explained about the renewal of the IAS membership to the members. Also the members were informed about the Link Camp and its selection procedures in the meeting. It was a good opportunity for the members to know more about the successful

workshop conducted during the past days and about the upcoming Hackathon Event. It was also an opportunity for the IAS Execom to collect the feedback from the members about our IAS Chapter activities and their needs.



Fig: IAS Member MEETUP

SIG-Artificial Intelligence wing

As a part of the "Special Interest Group -Artificial Intelligence wing" of IEEE IAS in association with IEDC of TKMCE, a class was conducted on the topic "Introduction to Machine Learning". A total of 25 participants attended the class. It focused on giving the participants an introduction and a concrete base in machine learning and its applications in the field of artificial intelligence. It also gave the participants a better understanding about the significance of 'Data Science' in the field of artificial intelligence. The participants actively participated in answering the questions asked by the speaker. At the end of the session, the participants had an intermediate level understanding about the topics. The whole class was handled by Jerome Francis.



Fig: SIG AI session

IAS SBC CEC Stall at TRIAC

IEEE Industry Applications Society Student Branch Chapter College of Engineering Chengannur organised a technical stall on 'Home Automation using Google assistant' during the event TRI-AC(Technical Revamping Initiative Aspired Concourse) held at FISAT, Angamaly on 27 th October 2019. TRIAC is a two day technical event conducted by IEEE IA/IE/PELS Jt. Chapter Kerala, IEEE PES Kerala Chapter and IEEE ComSoc Kerala Chapter.

The stall was handled by Mr. Aswin A Kumar and Mr. Ruben Mathew. They gave the students an introduction about Home Automation using Google assistant, an IoT platform based project which is used to control home appliances, devices etc. They also familiarised the students about NodeMCU and two softwares called Adafruit and IFTTT (If Then This That) which were used in their project. Students from various colleges in Kerala visited the stall. The students had an enthralling experience and all the doubts of students regarding home automation were also elucidated at the stall.



Fig: TRIAC Delegates at IAS SBC CEC stall

SIG IOT

A class on introduction to IOT & micro-processor was conducted by SIG IOT on 31st October, 2019 at 4:30 pm. It was taken by Akhil P. Through the interaction session the depth & interest of each student was known. The session was very informative and instilled in minds about the opportunities in the field of IoT in the present and future days. IoT is one of the important technologies which has a great future scope.



Fig: SIG IoT session

Technical Discussion on 'Humanoid Robots'

As part of the IEEE Day celebrations, IEEE Industry Applications Society Student Branch Chapter College of Engineering

Chengannur conducted a technical lecture on 'Humanoid Robots' on 4th October 2019. The session was handled by Mr Justin Monachan. The session aimed to enlighten the students with the emerging and challenging scopes of humanoid robots in the future. He opened his lecture by questioning and describing 'What are Humanoid Robots?'. He gave the students an idea about the history of humanoid robots and mentioned some of the famous humanoid robots like Sophia robot, Da Vinci robot etc. He then introduced the humanoid robot AR-MAR-6 to the students and explained the need for ARMAR-6 and its duties through a demonstration video. The future aspects of humanoid robots in various fields were also discussed. The lecture was helpful in inculcating a positive attitude towards Humanoid Robots among the students. The feedback received from students suggested that they welcomed this initiative and were motivated to explore more dimensions in this platform, along with being willing to do projects and research works related to this field.



Fig: Technical lecture on 'Humanoid Robots'

Quiz Program

Industry Applications Society Student Branch Chapter ASIET conducted weekly online quiz for the students of the institute every Friday. It is an online competition and the time is announced prior to the competition on the day of the quiz. The major aim of the quiz is to make the students up to date with the present technological changes and to build a world of knowledge for the students of the institution. Questions from various subjects like Mathematics, Basic Science, General Knowledge etc. were asked each week.

Membership Development Program

IEEE Industry Applications Society Student Branch Chapter College of Engineering Chengannur organized an orientation class for the first year students on 18th September 2019. The session was handled by IAS student members who were allotted to each class respectively. The session commenced by an elucidation about IEEE as an organization and its history. It predominantly concentrated on the IEEE Industry Applications Society, its benefits and opportunities that it provides to the student members. Each person shared about their experience as an IEEE volunteer and an IAS member, and about various events that they were a part of. They were informed about the various opportunities like volunteering, paper presentations, workshops and other intriguing events that they would be able to attend which would help them as an engineer. The session evoked enoticing feedback from the students and encouraged them to join IEEE and IEEE Industry Applications Society.

TRIAC Stall by IAS SBC JCET

A team of IEEE IAS SBC JCET volunteers led by Kirandas M, MDC, IEEE SB JCET, organized a stall on LiFi technology during TRIAC at FISAT on 27 th October 2019. The volunteers explained about LiFi technology, its working & scope of the technology to the delegates of the event from various colleges across Kerala. About 255 student members were able to understand the technology and its aspects.

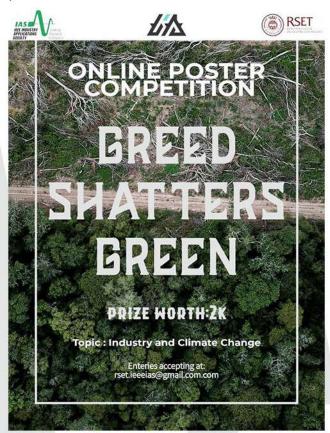


Fig: TRIAC Delegates at IAS SBC JCET stall

GREED SHATTERS GREEN -Online poster DESIGNING competition

RSET IEEE IAS CHAPTER conducted an online poster designing competition on climate change and deforestation. The competition was held in the name 'GREED SHATTERS GREEN'. It was an intercollege poster competition in which students from throughout the state participated. The competition was live for two weeks from November 1 to November 14 2019 entries were received and three of

them were selected for prizes. The competition saw the great abilities and talents of the students in making environmental posters.



Educational Activity.

IEEE Industry Applications Society Student Branch Chapter College of Engineering Chengannur conducted an educational activity on 'How to face university exams' for the first year students on 22 nd November 2019. The session was handled by Ruben Mathew, Laya Mariam Joseph and Aswin A Kumar. Ruben Mathew gave an introductory talk on how to successfully prepare for exams by highlighting some useful tips. Laya Mariam Joseph and Aswin A Kumar familiarised the students with some proven methods they tried while preparing for the exams. They stressed

the importance of using diagrams or schematic representations in exams. Then, they gave tips to reduce exam anxiety, organize course notes, manage time etc. They shared their experiences they had while preparing for exams, attending exams and also how they prepared successfully for university exams. Interesting feedback was received from the students at the end of the session.



Fig: Educational Activity by IEEE IAS SBC CEC

Technical Lecture on 'Synchronous Motors'

IEEE Industry Applications Society Student Branch Chapter College of Engineering Chengannur conducted a technical lecture on 'Synchronous Motors' on 22nd November 2019. The session was handled by Mr. Ruben Mathew, who gave an elucidation on electric motors and its different types. The session mainly focused on synchronous motor, its main features and construction. He then gave a brief illustration of the speed control and the working principle behind synchronous motor. He emphasized the several applications of synchronous motors in commerce, textiles and industries. The session concluded by clearing related doubts and queries of the students. The session was organized in an interactive

and engaging manner which evoked enticing feedback from the students.



Fig: IAS SBC CEC volunteers after technical

Membership Development session at TKMIT

A membership development session was conducted in TKM Institute of Technology, Karakode, Kollam on October 18th, 2019. The session was led by Nebic J. Representative Johnson(Student Kerala Chapter). During his session, he mentioned the importance of IEEE and its societies. The benefits that a organisational unit could provide was described to the volunteers. The different Student activities within IEEE Kerala Section was introduced to the students. He also took time to explain the meaning of IEEE Code of Ethics which is of great importance for an IEEE Volunteer. About 100 students listened to the session and gained a 100% increase in the membership of the SB.



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Designed and Edited by IA/IE/PELS Jt. Chapter Kerala Section

